

SYSTEMATIC ERRORS IN RADIO SOURCE POSITIONAL COORDINATES

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Astrometric VLBI experiments to obtain extragalactic radio source positions have been carried out since the late 1970's. The results are of importance in establishing a conventional barycentric celestial reference system. Recent data analyses are routinely producing radio source coordinates with formal uncertainties that are a fraction of a milliarcsecond. Imperfect modeling of VLBI observables is known to affect these estimates at the milliarcsecond (mas) level. For example, the latest DSN catalog has RMS formal uncertainties of approximately 0.5 mas, but recent studies of VLBI modeling at ocean tidal frequencies have indicated defects at least at the 0.1 mas level; other effects can be of equal importance. Using the DSN data set as well as the Crustal Dynamics, IRIS, and Navnet VLBI observations, we examine precession, nutation, source structure, ocean tidal, and local station displacement mismodeling in order to provide realistic accuracy estimates for radio source positions.